CLAIMS

1. An optical head comprising:

a semiconductor laser;

an objective lens for focusing a light beam from the semiconductor laser onto an information recording medium;

a light beam separator that is located between the semiconductor laser and the objective lens, includes substantial interference regions for light that is reflected from the information recording medium and travels in a straight path and ± first-order diffracted light produced by information tracks of the information recording medium, and diffracts each of plural light beams in regions of the substantial interference regions, where an amount of light is changed by a change in a relative angle between the information recording medium and the objective lens and by a shift of the objective lens in a radial direction of the information recording medium;

a light-receiving element that receives the light beam that is reflected by the information recording medium and separated by the light beam separator, and converts the light beam to an electrical signal; and

an arithmetic circuit that corrects a value of the electrical signal detected by the light-receiving element in accordance with a radial position signal corresponding to an amount of shift of the objective lens in the radial direction of the information recording medium, and detects the relative angle between the information recording medium and the objective lens or an amount of tilt of the information recording medium with respect to a predetermined reference plane.

2. The optical head according to claim 1, wherein the light beam separator diffracts part of each of the light beams in the substantial interference regions.

3. The optical head according to claim 1, wherein the plural light beams are present in four regions of the light beam separator, the four regions are separated from each other by an axis in the radial direction and an axis in a tangential direction, and the two axes pass through a substantial center of the light that is reflected from the information recording medium and travels in a straight path.

4. The optical head according to claim 1, further comprising an objective lens drive for driving the objective lens in the radial direction and a focusing direction,

wherein the radial position signal is calculated by using an applied current to drive the objective lens in the radial direction.

5. The optical head according to claim 1, wherein the radial position signal is produced by calculating amounts of light in at least two regions of the light beam separator, and the at least two regions are outside the substantial interference regions and are separated from each other by an axis in a tangential direction passing through a substantial center of the light that is reflected from the information recording medium and travels in a straight path.

6. The optical head according to claim 1, wherein the light beam separator is a hologram or a diffraction grating made of resin or glass.

7. The optical head according to claim 1, wherein the light beam separator comprises a $\lambda/4$ plate and a polarizing hologram that is located between the $\lambda/4$ plate and the semiconductor laser and has a diffraction effect only for a light beam of a predetermined polarization component, and the light-receiving element receives the light beam diffracted by the polarizing hologram.

8. The optical head according to claim 1, wherein the light beam separator is integrated with the objective lens and moved together with the objective lens in a focusing direction and the radial direction.

9. The optical head according to claim 1, further comprising a collimator lens between the objective lens and the semiconductor laser,

wherein the collimator lens is integrated with the light beam separator.